

WILDLIFE AND UPLAND OAK FORESTS

James G. Dickson¹

Abstract—The oak forests of the eastern U.S. have always been diverse as well as dynamic; continually molded and influenced by a variety of natural and anthropogenic forces. These forests support thousands of species of plants, untold numbers of insects and other invertebrates, and hundreds of species of vertebrate wildlife. Because of the large number of species, I focus on species and communities of special interest or concern. Acorns are a primary fall and winter diet item of many vertebrate species. Acorns build energy reserves, which are very important for winter survival and successful reproduction for a number of species. The wild turkey, white-tailed deer, and American black bear, which suffered and were very limited a century ago, have been restored and now flourish. There are a wide variety of bird species associated with upland oak forests; most associated with specific habitat attributes. Generally, there is concern for two categories of birds: nearctic-neotropical migratory birds, and early successional, grass-forb associated birds. Bats are important ecological components of oak forests; several species of cave bats are endangered and there is concern for others. Even though upland oak ecosystems are mostly xeric, the forests support a high diversity of reptile and amphibian species, and provide important habitat for many species.

HISTORY

Around 10,000 BC or even earlier, the first humans arrived in North America. Here they found several species of megafauna and beech-maple forests. By about 5,000 BC the megafauna had disappeared and the climate had become warmer and drier. Oak-Hickory forests dominated the lower eastern United States on upland sites, with Pine-Hardwood forests prominent in the deep South. The influence of the natives in North America grew, and accounts of early French explorers in the 1500s chronicled substantial populations and influence on the land by natives. But later accounts by Spanish explorers in the 1700s painted quite a different picture. Apparently there had been widespread demise of the natives, attributed to diseases contracted from the earlier explorers. A substantially reduced human population had lessened effect on the forest and there was widespread development of old-growth forests.

Accounts of the earliest naturalists in the 1700s such as William Bartram (Van Doren 1928) tell of vast old-growth forests with large trees, snags, and down material. But he also describes prairies and grass-forb habitat with associated species, such as indigo buntings and yellow-breasted chats, and game species such as the wild turkey, white-tailed deer, and elk; each of which depend on early successional habitat during some stage of their life cycle. A forest savannah condition with sparse overstory and grassy ground cover probably was widespread in the lower South, but also apparently prevalent in some mountain systems, such as the Ouachitas as recounted by Bukenhofer and Hedrick (1997).

But the old growth forests of the 1700s and its associated wildlife would soon face the onslaught of European colonizers who rapidly changed the landscape. As natives were overcome or evicted, new settlers colonized the eastern North American hardwood forests. They cleared new ground to make way for their crops, and felled trees for wood to heat their homes and build their houses and barns. The vast forests of the East fell to the axe and saw.

In the late 1800s and early 1900s the wholesale clearing of the forest and the direct harvest of many species of animals were profound. There was little thought of or provision for the future, nor concept of conservation. Game animals were taken at will to feed the settlers' burgeoning families, and predators were regarded as competitors or threats and shot. A few species, such as the Carolina parakeet and passenger pigeon, were lost forever and other species suffered. The relatively remote eastern mountains functioned somewhat as refuges for a few impacted species, such as black bears and wild turkeys.

Recovery of the forests in some fashion began in early 1900s. Southeastern mountains were less fertile than prairies or bottomland, and were less populated by humans. Consequently, a higher portion of these mountainous regions was included in the National Forests. Later, cutover forest land and crop land were abandoned and regenerated to forest. And even later, wildlife management had its beginnings. The first efforts were directed toward game species whose populations were precariously low.

In recent years, oak forests of the U.S. have aged and increased in extent. The broad category of upland hardwood forests of the South increased from 65 to 75 million acres from 1952 to 1996 (Sheffield and Dickson 1998). And many stands are even-aged, having regenerated at about the same time.

DYNAMIC NATURE

The oak forests of the eastern U.S. have always been diverse as well as dynamic; having been continually molded and influenced by a variety of natural and anthropogenic forces. Fire, windstorms, diseases, and insects have played a major role in what the forests were and how they functioned. The natives, and even more so the early settlers, added to these forces, compounding the effects. One wholesale change illustrates. The American chestnut was once a dominant tree of eastern Appalachian hardwood

¹ Merritt Professor of Forestry, Louisiana Tech University, Ruston, LA 71272.

forests. But the chestnut blight in the early 1900s eliminated mature forms of American chestnut from the landscape. So what once was an oak-chestnut forest became an oak-hickory forest.

Today, the dynamic nature and changes continue. For example, demise of older oak stands is being wrought by the gypsy moth in the Appalachians and the red oak borer in the Ozarks. Influences on the forests are exacerbated by the increased number of humans and their associated technology. Large scale damming of rivers, wholesale land use changes, and pesticides serve as examples.

WILDLIFE

Upland oak forests of the U.S. support thousands of species of plants, untold numbers of insects and other invertebrates, and hundreds of species of vertebrate wildlife. Wildlife communities have evolved over thousands of years with the forests and have been molded by the dynamic nature of the forests. A few species, such as the Carolina parakeet, have been lost. Premier game species, such as the white-tailed deer and wild turkey, have been restored. While the status of others, such as the myriad reptiles and amphibians, remain generally unknown.

Acorns

Obviously, one of the most prominent characteristics of oak forests in relation to wildlife is the acorns they produce. Acorns are a primary fall and winter diet item of many vertebrate species, as well as insects. Some examples of the variety of species which consume acorns include: passerine birds- such as blue jays, woodpeckers- red-headed and red-bellied, waterfowl-wood ducks (even on upland sites), squirrels- gray, fox, and southern flying, small terrestrial rodents- such as wood rats and *Peromyscus*, raccoons, wild hogs, and high profile species: black bear, white-tailed deer, wild turkey, and northern bobwhite.

Oak acorns have relatively low levels of protein and phosphorus (Short and Epps 1976), but with a high lipid content they provide an important energy source to animals. Acorns build energy reserves, which are very important for winter survival and successful reproduction for a number of species.

An important feature of oak mast production in regard to the ecology of the forest and its wildlife communities is the extreme variability in annual production. For example, in a 19-year study in the Ozark Mountains of Arkansas, annual acorn production fluctuated drastically in all four vegetation types (Dickson 1990). In each forest type there was very little or no production in 5 of the 19 years. There was no production in the cedar glades or streambottom oak type, less than 10 kg/ha in the pine-oak type, and less than 22 kg/ha in the upland oak type. Conversely, mast production was profuse (>120 kg/ha) in 7 of the 19 years in the upland oak type and 9 of 19 years in the pine-oak type.

In that myriad species consume acorns, this phenomenon of erratic acorn production helps insure regeneration of oak forests during years when the ample acorn supply surpasses the collective demands of species that consume acorns. But this extreme variability in annual production is tough on the wildlife that depends on mast.

The importance of acorns to species and its' effects on their population viability is demonstrated by data from studies of several different species. During boom years life is good; but in bust years there is extreme competition for acorns and wildlife suffers. For example in an oak dominated Ozark forest, annual acorn production was critical to deer herd health and productivity (Rogers and others 1990). During years of low acorn production, winter survival of deer was lower and fawn survival the subsequent spring also was lower than that of years of moderate to high production.

Mast from oaks also is very important to black bears. In the southern Appalachians, oak mast, primarily white oak, has a significant impact on bears in terms of natality, mortality, and movements (Pelton 1991). The birth and survival of young bears were directly associated with oak mast crops.

Acorns are also very important to some species of rodents. For example, populations of white-footed mice declined with acorn failures and increased with acorn supplementation (Jones and others 1998).

Oak forests are important habitat for wild hogs (Dickson and others 2001). For example, in the Appalachians Eurasian wild hogs used mixed oak stands more than expected during years of high mast production, but not when little mast was available (Singer and others 1981); and a similar habitat use pattern was observed in bottomland hardwoods in South Carolina (Kurz and Marchinton 1972). Acorns are a preferred food item and hogs are efficient foragers. During years of minimal acorn production, wild hog consumption of acorns probably negatively affects native mast-consuming species.

Turkeys, deer, and bear

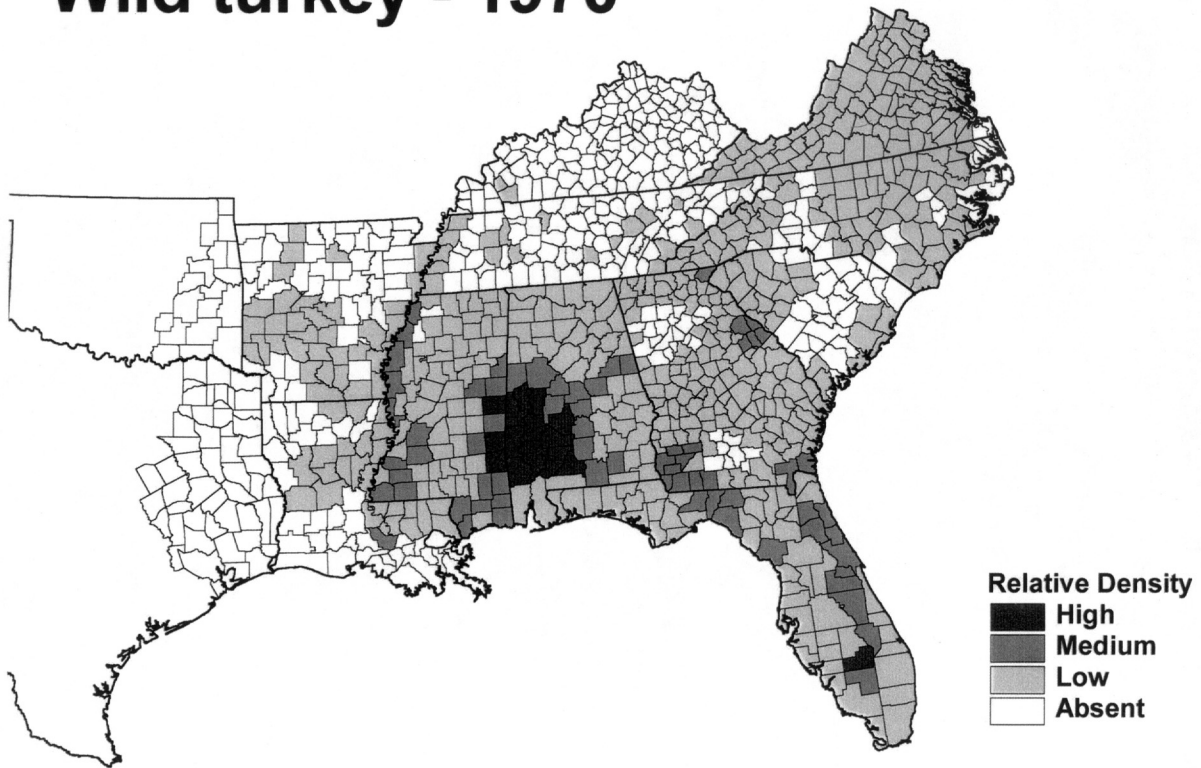
The wild turkey, white-tailed deer, and American black bear suffered, and experienced population lows during the era of exploitation in the 1800s and early 1900s. But they have been restored, and populations have increased dramatically in recent decades (fig. 1).

Traditional and optimum habitat for the wild turkey is oak forests in conjunction with other associated land uses (see Dickson 1992). These forests and the mast they produce provide optimum fall and winter habitat, and are used extensively. Associated forest ground and shrub vegetation, openings, and agriculture pastures and crop land provide strutting grounds, nesting sites, and appropriate brood habitat.

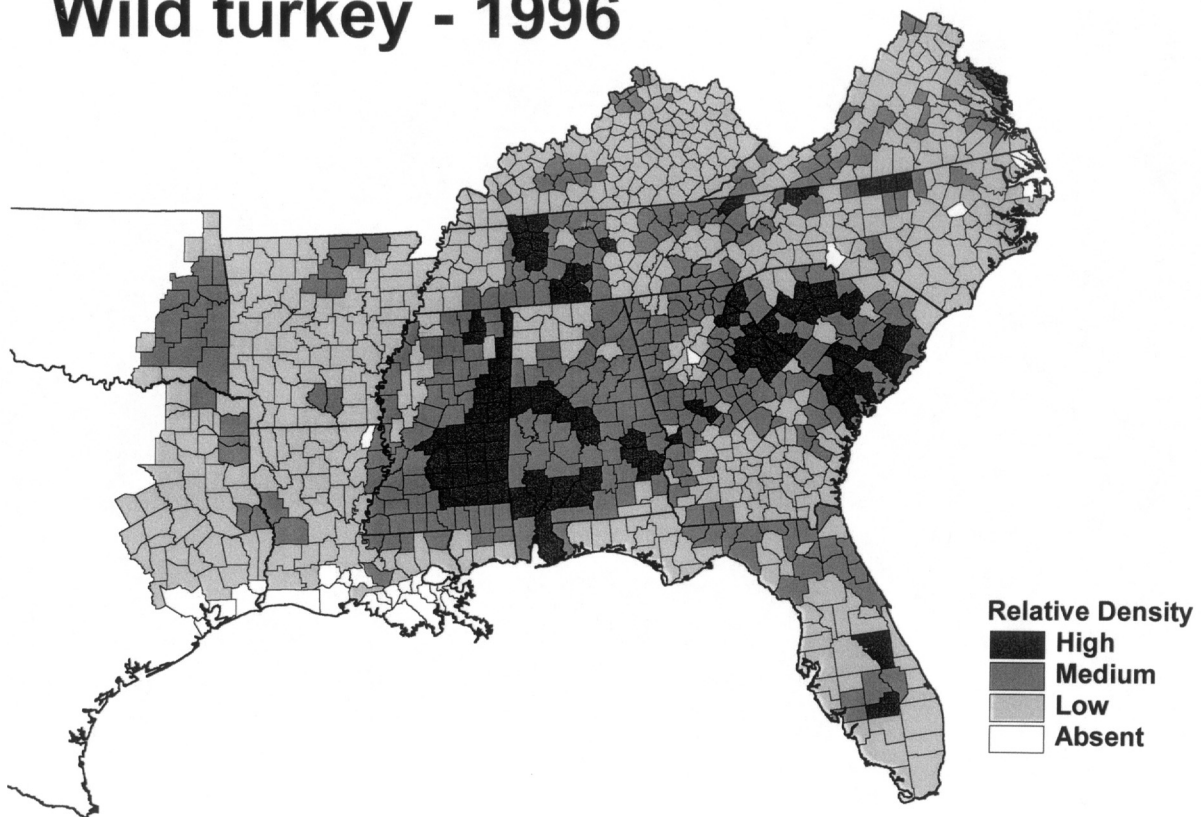
Wild turkeys have persisted in oak forests historically. Recently, due to maturing of the forests, better protection, and trapping and transplanting, populations have prospered, and now thrive throughout southern oak forests (fig. 1) and elsewhere. Population estimates nationwide now surpass 5 million.

White-tailed deer are distributed throughout and thrive today in upland oak forests where their dietary needs of browse, forbs, fungi, and soft and hard mast are met. Populations today are found in every county in the Southeast (fig. 1). Although soils are not as productive in mountainous oak forests as in some other types and they are not optimum

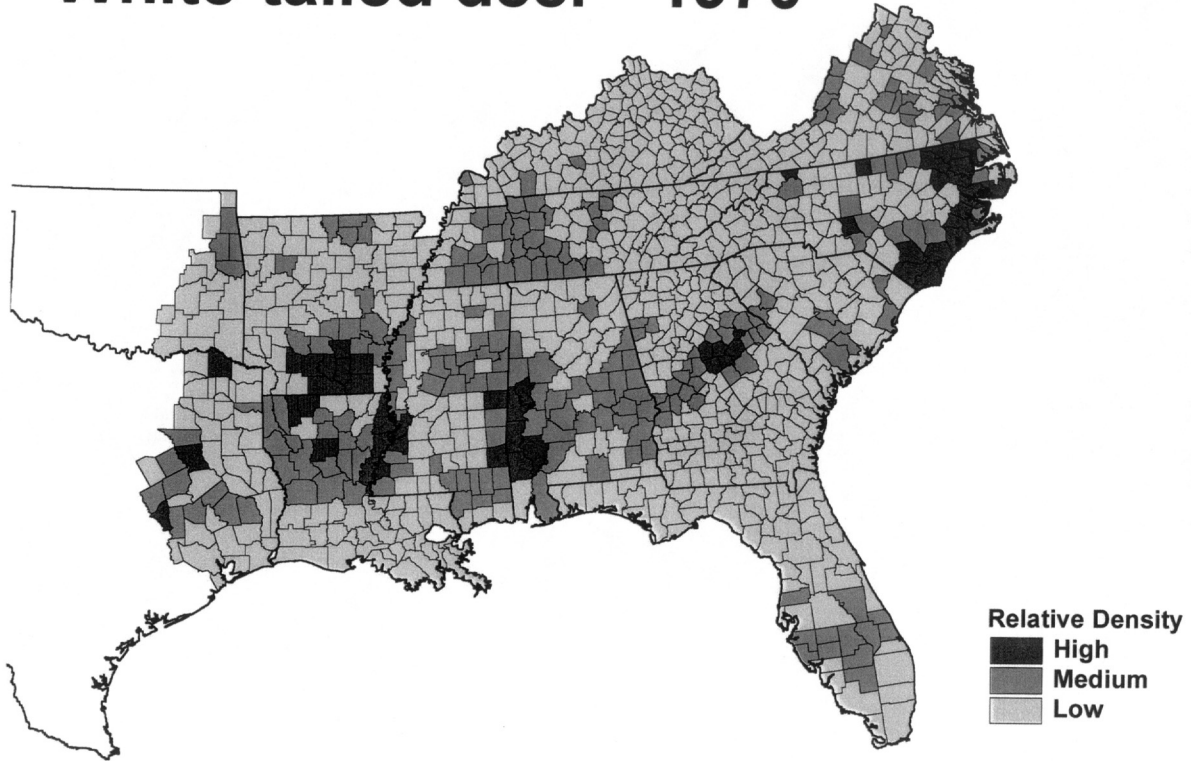
Wild turkey - 1970



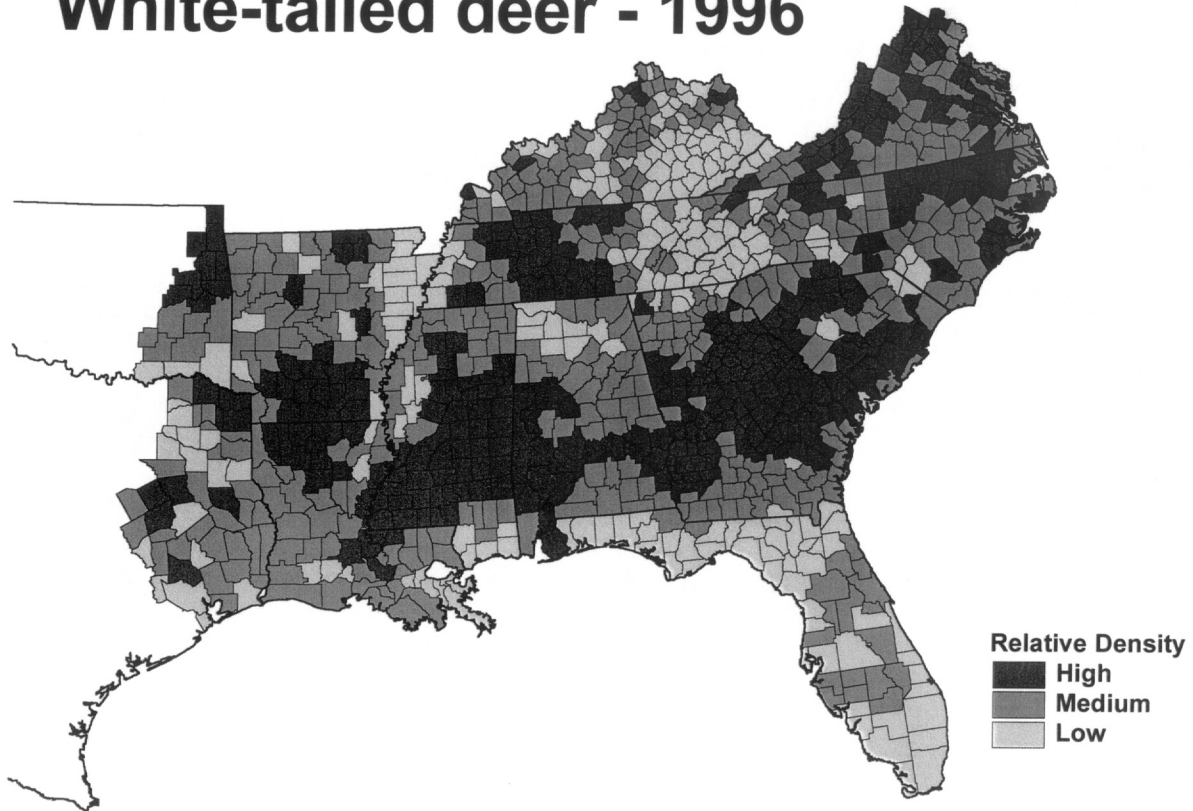
Wild turkey - 1996



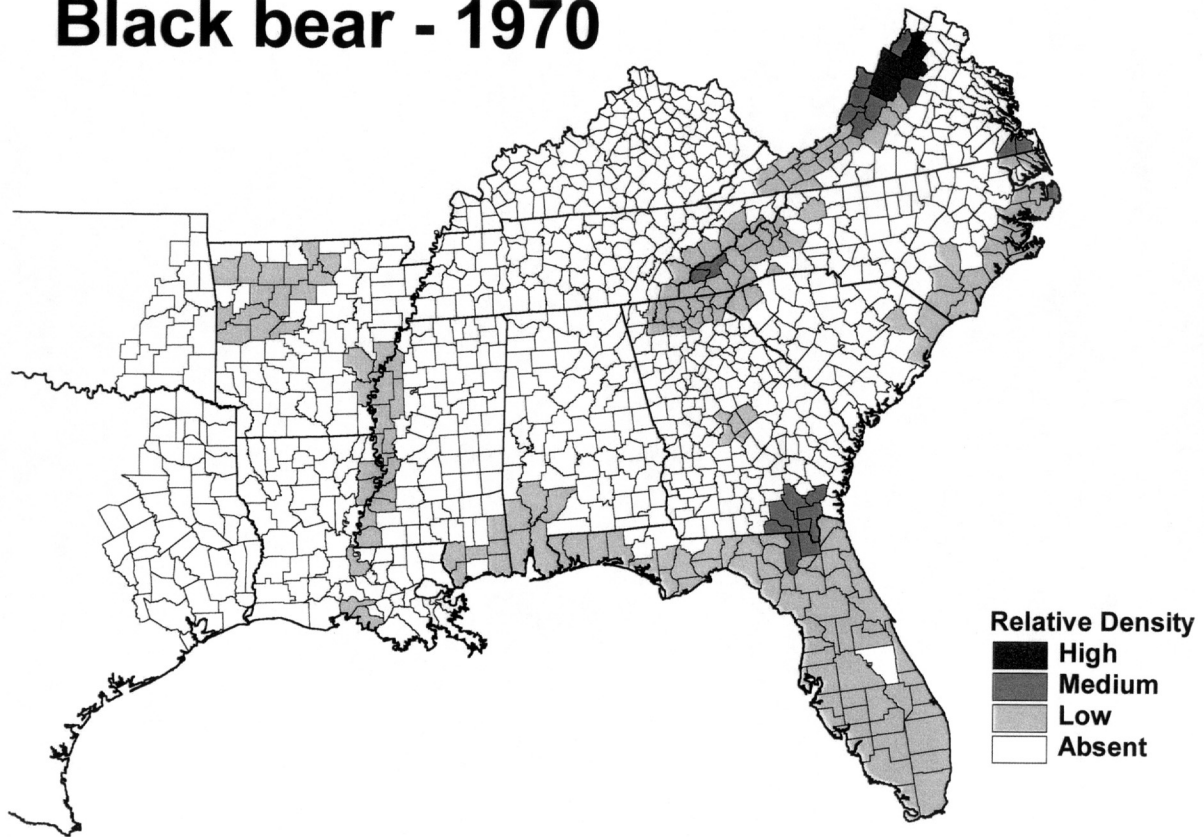
White-tailed deer - 1970



White-tailed deer - 1996



Black bear - 1970



Black bear - 1996

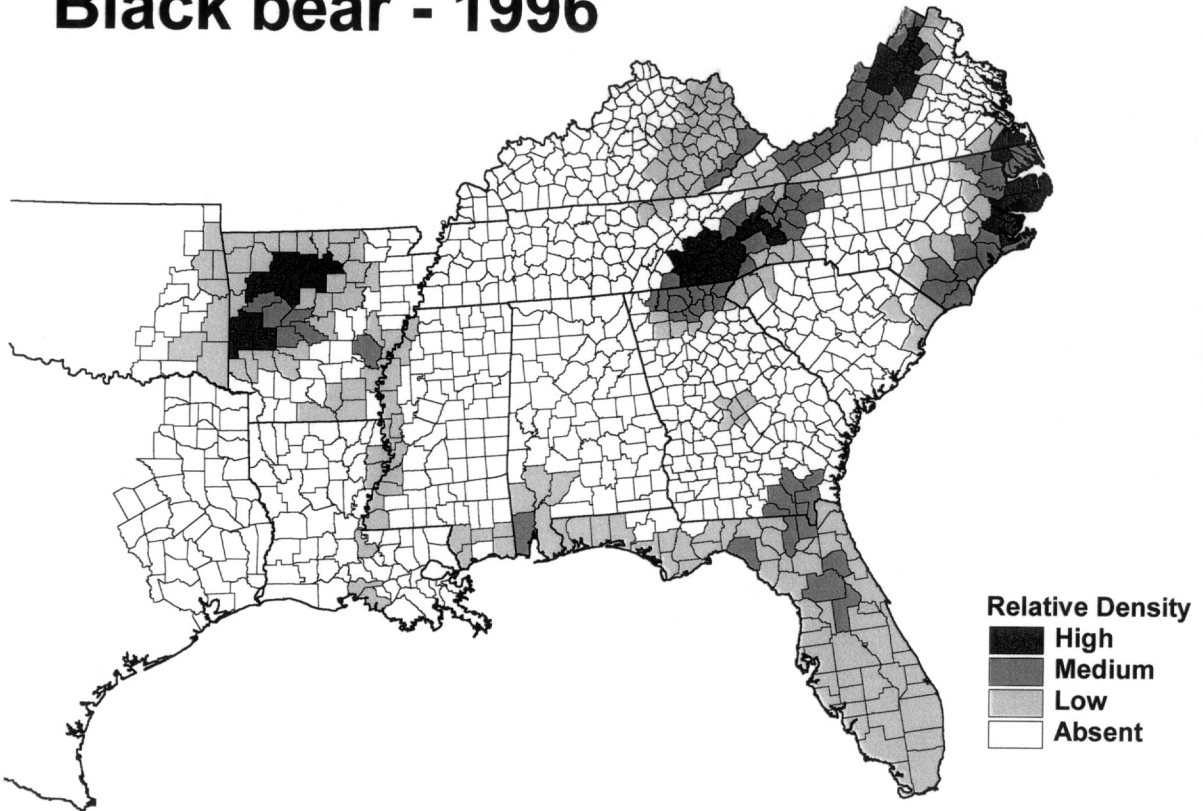


Figure 1—Relative densities of wild turkeys, white-tailed deer, and American black bear for 1970 and 1996 by county in the Southeast. Density categories are: turkey-low <6, med 6-15, high >15 per sq mi; deer- low <15, med 15-30, high >30 per sq mi; bear-low <1 per 1,500 ac, med- 1 per 1,500-1 per 1,000 ac, high >1 per 1,000 ac (from Dickson 2001).

deer habitat, they still remain heavily forested and white-tailed deer fare well there. Also, the white-tailed deer has proven highly adaptable, and thrives where oak forests are interspersed with agriculture crops or even suburbs.

Black bears require large areas of suitable habitat with little human interaction, secure corridors for movements, some very thick understory habitat, and rocky outcrops or large hollow trees for denning (Pelton 2001). As with the wild turkey and white-tailed deer, the American black bear suffered substantially earlier from habitat loss and direct

harvest. The last refuges were remote areas, such as swamps and mountains. Populations persisted and recently, numbers have increased and populations are viable in mountainous eastern oak forests- the Appalachians and Ozark/Ouachitas (fig. 1).

Birds

Some upland oak forests, such as the southern Ridge and Valley and Interior Low Plateau are heavily fragmented. Conversely the oak forests of the Ozarks and southern Appalachians are substantial in distribution and remain

Table 1—Abundance of nearctic-neotropical migratory birds in central hardwood forests

Species	Stand age					
	R	S	P	M	G	T
Whip-poor-will	U	U	U	U	U	U
Ruby-throated hummingbird	C	N	N	N	?	N
Acadian flycatcher	N	N	C	A	N	A
Eastern wood-pewee	N	N	U	A	N	A
Eastern phoebe	N	N	U	U	N	U
Great-crested flycatcher	C	C	C	C	C	C
Blue jay	C	C	C	C	C	C
American crow	U	U	U	U	U	U
Carolina wren	C	C	U	N	?	?
Blue-gray gnatcatcher	A	C	C	C	C	C
Eastern bluebird	C	N	N	N	N	N
Wood thrush	U	C	C	C	U	C
Gray catbird	C	C	N	N	?	N
White-eyed vireo	C	C	N	N	?	N
Yellow-throated vireo	N	N	N	U	N	U
Red-eyed vireo	U	U	A	A	U	A
Blue-winged warbler	A	C	N	N	?	N
Golden-winged warbler	C	U	N	N	?	N
Northern parula	N	N	U	C	N	C
Chestnut-sided warbler	C	C	N	N	?	N
Yellow-throated warbler	N	N	U	U	N	U
Pine warbler	N	N	C	C	N	C
Prairie warbler	A	C	N	N	?	N
Black-and-white-warbler	C	C	C	C	C	C
Worm-eating warbler	U	C	C	C	C	C
Ovenbird	U	C	C	C	U	U
Louisiana waterthrush	N	U	C	C	C	C
Common yellowthroat	A	U	N	N	?	N
Kentucky warbler	A	C	U	U	A	C
Hooded warbler	C	C	U	U	C	C
Yellow-breasted chat	A	C	N	N	?	N
Orchard oriole	U	N	N	N	N	N
Summer tanager	C	C	C	A	C	C
Scarlet tanager	U	U	C	A	U	A
Indigo bunting	A	C	U	U	A	C
Eastern towhee	A	U	N	N	C	N
Field sparrow	A	N	N	N	?	N
Brown-headed cowbird	A	C	C	C	C	C
American goldfinch	U	N	N	N	N	N

R = regeneration; S = sapling; P = poletimber; M = mature; G = group selection; T = single tree selection; A = abundant; C = common or regular; U = uncommon; N = not present.

Source: Dickson and others (1993).

mostly intact. These widespread hardwood forests may serve as source populations for some species, contributing to landscape-scale population viability.

There is a wide variety of bird species associated with upland oak forests. Some are habitat generalists, but most are associated with specific habitat attributes. Forest structure, among other factors, determines bird species distribution (table 1). Some species, such as the field sparrow and northern bobwhite, are associated with grass-forb habitat. Others, such as the prairie warbler and white-eyed vireo,

inhabit shrub level vegetation. Some, such as the Kentucky and hooded warblers inhabit shaded forest understories. And some, such as the red-eyed vireo and summer and scarlet tanagers, are found in tree canopies.

Based on Partners in Flight assessments, generally there is concern for two categories of birds: nearctic-neotropical migratory birds, and early successional, grass-forb associated birds (Hunter and others 2001). Migratory species considered of high priority and associated with mature oak forests are presented in table 2. Causes for the decline are

Table 2—Primary habitat associations and seasonal status among high priority landbird species within upland hardwood-dominated forested landscapes of the Southeastern U.S.

Regional high priority species	Hardwood-dominated forests		
	Hardwood pine mix	Central hardwoods	Appalachian forests
American Woodcock	B,W		B
Yellow-billed Cuckoo	B	B	B
Northern Saw-whet Owl			
S. Appalachian pop.			b
Chuck-will's-widow	B		
Red-headed Woodpecker		B,W	
Yellow-bellied Sapsucker			
S. Appalachian pop.			B
Eastern Wood-Pewee	B	B	B
Acadian Flycatcher	B	B	B
Black-capped Chickadee			
S. Appalachian pop.			b
Red-breasted Nuthatch			
S. Appalachian pop.			b
Brown Creeper			
S. Appalachian pop.			b
Winter Wren			
S. Appalachian pop.			b
Golden-crowned Kinglet			
S. Appalachian pop.			b
Wood Thrush	B	B	B
Yellow-throated Vireo		B	B
Northern Parula	B	B	B
Black-throated Blue Warbler			B
Black-throated Green Warbler			
Atlantic Coastal pop.	B		
Blackburnian Warbler			B
Cerulean Warbler	B	B	B
Worm-eating Warbler	B	B	B
Swainson's Warbler	B		B
Louisiana Waterthrush		B	B
Kentucky Warbler	B	B	B
Hooded Warbler	B	B	B
Canada Warbler			B

Appalachian forests = Appalachian forests include here mature to old-growth northern hardwoods, hemlock-white pine-hardwoods, mixed mesophytic (cove) hardwoods, with various gradations into Appalachian oak (central hardwoods) types on drier more exposed sites and into spruce-fir at the highest elevations; B = breeding; W = wintering; B,W = refers to species using similar habitat but in different areas between seasons (i.e., highly migratory); lower case (b) = refers to habitats where species occurs in very low densities but may still prove to be important to that species.

Source: Hamel (1992); Hunter and others (2001).

unclear. Perhaps wintering habitat is important; populations of some mature forest associated species have declined while upland hardwood forests in the U.S. have aged. Some of these are isolated populations of otherwise widespread species, such as the southern Appalachian population of the Bewick's wren (Hunter and others 2001).

Another group that has experienced declines in recent decades is the early successional associated species. Populations of resident game species, such as northern bobwhites, ruffed grouse, and American woodcock, have suffered substantial declines in recent decades as upland forests have aged (Dickson 2001). Because of habitat changes and/or population declines, several species in both groups, nearctic-neotropical migrants associated with early successional habitat, such as prairie, chestnut-sided, and golden-winged warblers are often listed as species of concern (Hunter and others 2001).

So forest structure, and natural and anthropogenic forces that affect that structure, to a large extent determine bird communities. One example is the effects of the ecosystem management practices on the Ouachita National Forest (Bukner and Hedrick 1997). In response to thinning and prescribed burning, Wilson and others (1995) found 10 ground/shrub foraging and shrub nesting species of breeding birds were favored, and 2 ground nesters, the ovenbird and black-and-white warbler were disfavored.

The effects of tree harvesting on habitat structure and bird communities have been amply demonstrated (Dickson and others 1993). Two studies serve as examples and illustrate the relationships. In an oak-hickory forest in northwestern Arkansas, heavy cutting of understory and selective cutting of overstory disfavored the understory nesting bird guild, but favored some early successional species such as the indigo bunting, edge species such as the eastern wood pewee, and canopy nesters in the short term (Rodewald and Smith 1998). In a central hardwood forest in Missouri (Annand and Thompson 1997), five migrant songbirds, the blue-winged warbler, prairie warbler, northern towhee, white-eyed vireo, and yellow-breasted chat were more abundant in clearcut treatments. Indigo buntings and field sparrows were more abundant in clearcut and shelterwood treatments. Hooded warblers and northern parulas were more abundant in selection treatments. Ovenbirds and wood thrushes were more abundant in mature sites. And Acadian flycatchers and red-eyed vireos were more abundant in group and single-tree selection treatments and mature stands. A nest parasite, the brown-headed cowbird, was more abundant in clearcuts, and abundance of the two avian nest predators, the blue jay and American crow, did not differ among the five treatments.

Bats

Bats are important ecological components of oak forests. Several species are endangered, and there is concern for other species. Bats are long-lived and have a low reproductive rate; usually one offspring each year. Bat species can be grouped into two categories: cave bats, which inhabit caves at some time, and non-cave bats, which seldom enter caves. Three species of cave bats in the southern oak forests are endangered: the gray bat, the Indiana bat, and

the eastern populations of Townsend's big-eared bat (Ozark and Virginia big-eared bats) (Harvey and Saugey 2001). And three other species of forest cave bats, the southeastern bat, the eastern small-footed bat, and the Rafinesque's big-eared bat are of special concern.

Disturbance of cave bats by humans can be a problem. Cave bats in hibernating or maternity colonies expend precious energy when disturbed, and are vulnerable to disturbance. Protection of cave sites is important to the conservation of these species.

Habitat features and management activities near bat caves and even forest wide may affect bats (Harvey and Saugey 2001). For example, a group of Rafinesque's big-eared bats always foraged less than 2.5 km from their hibernaculum and maternity cave along ridgelines in an upland oak-hickory forest (Hurst and Lacki 1999). Forest structure obviously is important to bats during some time in their life cycle. Bats use tree leaves, loose bark, cavities, snags, and other structure, such as spanish moss for roosting and sometimes maternity sites. Trees with these features are used by and benefit bats. Streamside zones contain many tree and stand features positive for bats; so retention of mature trees in streamside zones when harvesting adjacent stands is beneficial. Bats are insectivorous, and silvicultural practices which promote flying insects can be positive. Tree harvesting or prescribed burning may open foraging areas and enhance insect prey. Bats often forage over water, such as ponds and lakes, so appropriate habitat near water probably benefits bats.

Reptiles and amphibians

Even though upland oak ecosystems are mostly xeric, the forests support a high diversity of reptile and amphibian species, and provide important habitat for many species. Some species are not associated with water, and spend their entire life in forested habitat, often in small areas. The greatest diversity of salamanders in the United States occurs in the oak-dominated southern Appalachian region (Gibbons and Buhlmann 2001). Species of the genus *Plethodon* are common and several are endemic, with relict populations inhabiting isolated mountains (Pough and others 1998). Examples include the Peaks of Otter salamander on a 5-mile stretch of ridge in Virginia, the Cow Knob salamander at high elevations on the George Washington National Forest along the Virginia-West Virginia boundary, and the Weller's salamander in the high elevation remnant spruce forests on mountain tops in North Carolina and Virginia.

Other species are dependant on non-forest habitat for critical stages of their life cycle. Salamanders, such as *Ambystoma*, and frogs, such as narrow mouthed toads, inhabit forests as adults but lay their eggs in water and their larvae are aquatic. For these species, stream structure and water quality in conjunction with moist forest habitat are important habitat features. Streamside zones or strips of mature trees along permanent or intermittent streams can provide important habitat for a number of species (e.g., Rudolph and Dickson 1990).

Other species are dependant on different and often limited habitat. Examples include the Tennessee cave salamander,

which inhabits caves, and the green salamander that inhabits shaded, moist, sandstone cliffs. For species or populations that inhabit limited and often isolated habitat, moist upland forests may function very importantly as connective or linkage habitat. Also, other forest structures, such as snags and down material, afford protection and provide habitat for a variety of reptiles and amphibians.

CONCLUSIONS

Upland oak forests have always been dynamic, subjected to and developed by a variety of natural and anthropogenic forces. Wildlife communities of these forests have evolved with and are adapted to these forests and their dynamic nature. To accommodate the full complement of native wildlife a wide variety of different habitats, such as grass-forb, shrub, woodland savannah, and mature stands should be maintained in sufficient quantity and size.

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APPENDIX A

Common and Scientific Names of Animals in Text

Common name	Scientific name	Common name	Scientific name
Mammals		Birds (cont.)	
Small-footed bat	<i>Myotis leibii</i>	Bewick's wren	<i>Thryomanes bewickii</i>
Indiana bat	<i>M. sodalis</i>	Blue-winged warbler	<i>Vermivora pinus</i>
Southeastern bat	<i>M. austroriparius</i>	Golden-winged warbler	<i>V. chrysoptera</i>
Gray bat	<i>M. grisescens</i>	Northern parula	<i>Parula americana</i>
Rafinesque's big-eared bat	<i>Plecotus rafinesquii</i>	Chestnut-sided warbler	<i>Dendroica pennsylvanica</i>
Townsend's big-eared bat	<i>P. townsendii</i>	Prairie warbler	<i>D. discolor</i>
Gray squirrel	<i>Sciurus carolinensis</i>	Black-and-white warbler	<i>Mniotilta varia</i>
Fox squirrel	<i>S. niger</i>	Ovenbird	<i>Seiurus aurocapillus</i>
Southern flying squirrel	<i>Glaucomys volans</i>	Kentucky warbler	<i>Oporornis formosus</i>
White-footed mouse	<i>Peromyscus leucopus</i>	Hooded warbler	<i>Wilsonia citrina</i>
Eastern woodrat	<i>Neotoma floridana</i>	Yellow-breasted chat	<i>Icteria virens</i>
Black bear	<i>Ursus americanus</i>	Summer tanager	<i>Piranga rubra</i>
Raccoon	<i>Procyon lotor</i>	Scarlet tanager	<i>P. olivacea</i>
Wild hog	<i>Sus scrofa</i>	Eastern towhee	<i>Pipilo erythrophthalmus</i>
Elk	<i>Cervus elaphus</i>	Field sparrow	<i>Spizella pusilla</i>
White-tailed deer	<i>Odocoileus virginianus</i>	Indigo bunting	<i>Passerina cyanea</i>
Birds		Brown-headed cowbird	<i>Molothrus ater</i>
Wood duck	<i>Aix sponsa</i>	Reptiles and Amphibians	
Ruffed grouse	<i>Bonasa umbellus</i>	Eastern narrow-mouthed toad	<i>Gastrophryne carolinensis</i>
Wild turkey	<i>Meleagris gallopavo</i>	Green salamander	<i>Aneides aeneus</i>
Northern bobwhite	<i>Colinus virginianus</i>	Tennessee cave salamander	<i>Gyrinophilus palleucus</i>
American woodcock	<i>Scolopax minor</i>	Peaks of Otter salamander	<i>Plethodon hubrichti</i>
Carolina parakeet	<i>Conuropsis carolinensis</i>	Cow knob salamander	<i>P. punctatus</i>
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	Weller's salamander	<i>P. welleri</i>
Red-bellied woodpecker	<i>M. carolinus</i>	Invertebrates	
Eastern wood-pewee	<i>Contopus virens</i>	Gypsy moth	<i>Lymantria dispar</i>
Acadian flycatcher	<i>Empidonax virescens</i>	Red oak borer	<i>Enaphalodes rufulus</i>
White-eyed vireo	<i>Vireo griseus</i>	Plants	
Red-eyed vireo	<i>V. olivaceus</i>	American chestnut	<i>Castanea dentata</i>
Blue jay	<i>Cyanocitta cristata</i>	White oak	<i>Quercus alba</i>
American crow	<i>Corvus brachyrhynchos</i>	Spanish moss	<i>Tillandsia usneoides</i>